

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Allowed) A digital mammography imaging method comprising the steps of:
using at least one sensor to detect radiation passed through an object, each of the at least one sensor containing at least one sensor module, wherein the at least one sensor module contains one or more pixel columns which receive image data,
arranging the object to be imaged in a compression structure that is essentially motionless, the compression structure comprising an essentially plane-like upper compression paddle and an essentially plane-like lower compression paddle or a shelf having an essentially plane-like top surface,
scanning continuously across said object with a beam which originates from a radiation source having a focus, the focus of the radiation source being essentially motionless in space, the beam being limited to be narrower than the object to be imaged and adapted essentially to an active surface of the at least one sensor, and
moving the at least one sensor in synch with the scanning movement of the beam while at the same time the active surface is kept essentially at right angles to the beam on a plane formed by the scanning movement of the beam, wherein movement of the at least one sensor is implemented by continuously adjusting the distance of the at least one sensor from the radiation source in such a way that the trajectory of the at least one sensor in the direction of the scanning movement of the beam becomes essentially linear, wherein said essentially linear movement of the at least one sensor takes place beneath the lower compression paddle or top surface of the shelf.
2. (Allowed) The imaging method according to claim 1, wherein the movement of the at least one sensor is realized by one or more actuators.
3. (Allowed) The imaging method according to claim 1, wherein at least a part of the movements of the at least one sensor are realized by mechanically forced control.

4. (Allowed) The imaging method according to claim 1, wherein said at least one sensor is moved in a such a way that the sensor is connected to a transmission element, which is moved along an essentially linear trajectory and the said connection is realized in such a way that the connection enables mutual rotational movement of the transmission element and the at least one sensor in the direction of said linear movement, whereby the said condition of perpendicular orientation of the sensor surface is realized by tilting the at least one sensor with respect to the said transmission element.

5. (Allowed) The imaging method according to claim 1, wherein said at least one sensor is arranged in functional connection with a control element, said control element enables altering the distance between the at least one sensor and the control element in the direction of the beam, said control element is moved along a curved trajectory and the distance between said at least one sensor and the control element is modified during the scanning of the beam in such a way that the trajectory of the sensor becomes linear.

6. (Allowed) The imaging method according to claim 5, wherein said control element is moved in a guide groove, the curvature of radius of the guide groove corresponding to the distance between said control element and the focus of the radiation source.

7. (Allowed) The imaging method according to claim 4, wherein said transmission element or a control element is moved integrated with a pendulum arm, the centre of rotation of said arm being situated on the level of the focus of the radiation source.

8. (Allowed) The imaging method according to claim 1, wherein the scanning movement of the beam is realized by moving a collimation element that limits the beam with the help of an actuator.

9. (Allowed) The imaging method according to claim 1, wherein a collimation element that limits the beam is moved essentially in parallel with the said linear movement of the sensor.

10. (Allowed) The imaging method according to claim 1, wherein the scanning movement of the beam is realized by moving a collimation element which limits the beam along

a curved path, the curvature of radius of which corresponding to the distance between the said collimator and the focus of the radiation source.

11. (Allowed) The imaging method according to claim 9, wherein the radiation source is swivelled and the scanning movement of the beam is realized by moving said collimation element in mechanical contact with the swiveling movement of the radiation source.

12. (Allowed) The imaging method according to claim 9, wherein the movement of the collimation element and the linear movement of the at least one sensor is synchronized mechanically.

13. (Allowed) The imaging method according to claim 12, wherein the movement of the collimation element and the at least one sensor in the direction of the scanning movement of the beam is synchronized by connecting the at least one sensor mechanically to a swiveling movement of the radiation source.

14. (Allowed) The imaging method according to claim 1, wherein the sensor or sensors are arranged to be formed, at right angles to the plane formed by the scanning movement, of at least one sensor column containing two or more modules and the active surface of each of the modules also being positioned at right angles with respect to the focus of the beam.

15. (Allowed) The imaging method according to claim 1, wherein the compression structure comprises one or two compression paddles, one or both of which are radiolucent.

16. (Currently Amended) A digital mammography imaging apparatus, comprising:

- a radiation source having a focus, the focus of the radiation source being essentially motionless in space,

- a sensor arrangement for detecting radiation, which arrangement contains at least one sensor formed of at least one sensor module, the at least one sensor module containing one or more pixel columns which receive image data,

- a compression structure for positioning an object to be imaged, located within an area between the radiation source and the sensor arrangement, the compression structure comprising

an essentially plane-like upper compression paddle and an essentially plane-like lower compression paddle or a shelf having an essentially plane-like top surface,

- means for limiting a beam from the radiation source essentially according to an active sensor surface of the said sensor arrangement,

- means for scanning continuously across said object with a beam which originates from the radiation source ~~moving the beam across the object being positioned to be imaged~~, and

- means for moving the said at least one sensor which belongs to the sensor arrangement in synch with the scanning movement of the said beam and keeping the said active sensor surface essentially at right angles to the beam on a plane formed by the scanning movement,

wherein the imaging apparatus includes means for continuously adjusting the distance of the at least one sensor from the radiation source in such a way that the trajectory of the at least one sensor in the direction of the scanning movement of the beam becomes essentially linear and takes place beneath the lower compression paddle or beneath top surface of the shelf.

17. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes at least one actuator for implementing the movement of the at least one sensor.

18. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes means for implementing at least a part of the movements of the at least one sensor by mechanically forced control.

19. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes means for linearly moving the at least one sensor and means for tilting the at least one sensor by a mechanically forced control along with the linear movement.

20. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes a transmission element arranged to be connected to the at least one sensor and means for linearly moving the transmission element and for tilting the at least one sensor in relation to the transmission element in the direction of the said linear movement.

21. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes a control element arranged to be moved along a curved trajectory in the direction of the scanning movement of the beam, which control element is arranged in a functional connection with said at least one sensor in such a way that their mutual distance in the direction of the beam is adjustable.

22. (Previously Presented) The imaging apparatus according to claim 21, wherein in order to form said curved trajectory, the apparatus includes a guide groove, the radius of curvature of said groove corresponding to the distance between the groove and the focus of the radiation source.

23. (Previously Presented) The imaging apparatus according to claim 22, wherein the apparatus includes a pendulum arm, the center of rotation of said arm being arranged on the level of the focus of the radiation source, whereby either a transmission element arranged to the apparatus or said control element, or both of them, is attached to the pendulum arm in such a way that the sensor or sensors can move in the direction of the longitudinal axis of the pendulum arm, or the pendulum arm itself has been arranged to be adjusted by its length.

24. (Previously Presented) The imaging apparatus according to claim 16, wherein the imaging apparatus includes means for moving a collimator element that limits the beam essentially in parallel with the linear movement of the sensor.

25. (Previously Presented) The imaging apparatus according to claim 16, wherein the apparatus includes means for moving a collimator element that limits the beam along a curved path, the radius of curvature of which corresponds to the distance between the collimator element and the focus of the radiation source.

26. (Previously Presented) The imaging apparatus according to claim 18, wherein-at least one of means for moving the beam and the at least one sensor is arranged in mechanical contact with a pendulum arm, the center of rotation of said arm being arranged on the level of a focus of the radiation source.

27. (Previously Presented) The imaging apparatus according to claim 26, wherein the collimator element, the at least one sensor and the radiation source are arranged in mechanical contact with the said pendulum arm in such a way that the said synchronization of the scanning movement of the beam and the movement of the at least one sensor takes place in a forced manner while the said pendulum arm is moved by an actuator.

28. (Previously Presented) The imaging apparatus according to claim 17, wherein the apparatus includes actuators for realizing all the movements of the at least one sensor and the means for limiting the beam.

29. (Previously Presented) The imaging apparatus according to claim 16, wherein the at least one sensor is arranged to be formed, in the direction at right angles to the plane formed by the scanning movement, of at least one sensor column which contains two or more modules, and the active surface of each module is also being positioned also at right angles to the focus of the beam.

30. (Cancelled)

31. (Previously Presented) The imaging apparatus according to claim 16, wherein the radiation source is stationary in space but arranged to be rotated about itself.